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Impact of copper intrauterine devices on sexual function: A prospective comparative study within the same cohort of Turkish women

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Abstract

Aim: This study sought to examine whether and to what extent copper intrauterine devices (CuIUD) were associated with adverse effects on women's sexual function, assessed at three time points, immediately before use, and 1 and 3 months after deployment

Material and Methods: This prospective study included 207 consecutive women who had presented to the Department of Gynecology. Data included age, number of parities, delivery methods, education status, and history of vaginal discharge and abnormal uterine bleeding. Immediately before and one and three months after deployment, participants were asked to complete the Female Sexual Function Index (FSFI).

Results: The mean age of 207 women was 34.2±6.4 years. At baseline, the incidence of sexual dysfunction was 41.1%, which increased significantly to 47.3% compared with baseline and final assessments (43. 3%). Scores of sexual desire and sexual arousal were significantly lower a month later than at baseline and 3 months later. Pain scores also increased significantly following implantation, both at 1 and 3 months.

Discussion: It is not surprising that implantation of a CuIUD would be associated with decreased sexual function, sexual desire, sexual arousal, and increased pain in the early period. This is because most women with a CuIUD still have fears of becoming pregnant and experience increased levels of pain due to an implanted CuIUD, both keeping them from being sexually activity. In the course of time, both fears and pain regress, allowing sexual function to return to pre-implantation levels.

Keywords

Incidence of Sexual Dysfunction, Copper Intrauterine Device, Sexual Pain

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Introduction

Female sexual function is an important component of quality of life, affecting an individual's psychological, relational, and physical life [1]. Contraceptive techniques have become popular among women who do not want to become pregnant or who prefer to postpone pregnancy [2]. Due to cost-effectiveness, long-term use, safety profile, and non-hormonal nature, copper intrauterine devices (CuIUD) have proved to be an appropriate option [3]. Devise-related gradual release of copper in the uterus leads to anti-inflammatory reactions that result in changes in endometrial and mucosal structures, which makes the environment unfavorable for spermatozoids [4].

Intrauterine devices may not only reduce fears of unwanted pregnancy, but also help increase sexual activity and pleasure. However, the early effects of intrauterine device implantation on sexual function have not been adequately studied.

This study sought to examine whether and to what extent CuIUDs are associated with adverse effects on women's sexual function, assessed at three time points: immediately before, and 1 and 3 months after deployment.

Material and Methods

Study design and participants

This prospective study included consecutive women who had presented between May 1, 2019 and August 1, 2023 to the Department of Gynecology of Avcılar Murat Kölük State Hospital for CuIUD implantation. Data included age, number of parities, delivery methods, education status, and history of vaginal discharge and abnormal uterine bleeding. Immediately before and one and three months after deployment, participants were asked to complete the Female Sexual Function Index (FSFI).

The participants were assessed clinically and for sexual function three times, i.e., baseline evaluation at the time of implantation, approximately one month and three months after the implantation. All IUDs were copper type TCu380A [5].

Inclusion criteria were age between 18 and 42 years and being sexually active. Exclusion criteria were the presence of comorbid conditions, a history of previous major pelvic trauma, psychiatric or neurological disorders, alcoholism, illicit drug use, use of drugs that might affect sexual function, illiteracy, and contraindications to intrauterine device implantation such as silver allergy, pregnancy, or Wilson's disease.

Questionnaires

The FSFI was developed by Rosen and colleagues to assess six domains of female sexual function (sexual desire, sexual arousal, lubrication, orgasm, satisfaction, and pain) and has become one of the most widely used measures of sexual functioning of women. The 19-item FSFI is easy to understand and has been adapted to a number of languages. Items are scored on a five-point (1 to 5) Likert scale, with lower scores corresponding to lower levels of sexual functioning and a score of less than 26.55 indicating sexual dysfunction. Fifteen items also include a sixth response option scored with zero indicating no sexual activity in the past four weeks [6, 7]. The Cronbach's α for the reliability of the FSFI in the Turkish language was found to be 0.92 [8].

The study was approved by the Ethics and Research Committee of Sadi Konuk Training and Research Hospital (Permission No: 219-08-25 and date: 22.04.2019) and was performed in accordance with the principles and guidelines of the Declaration of Helsinki [9]. All participants were informed about the study and gave consent to the publication of the results. Analysis and reporting of the results are in compliance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist.

Data processing and analysis

Data were collected using a structured format, including sociodemographic features and were processed using the Statistical Package for Social Sciences (SPSS) version 21 (IBM Corp., Armonk, N.Y.; USA). Quantitative data were expressed as means, standard deviation (SD), median, minimum, and maximum, and qualitative data as frequencies and percentages. Homogeneity was checked using Levene's test, where a p-value >0.05 was considered in favor of homogeneity. The Shapiro-Wilk normality test was used to check whether continuous variables were normally distributed.

For pairwise comparisons, numerical variables were compared using the independent t-test if normally distributed. Comparisons of normally distributed variables were made using the repeated measures ANOVA test. Nominal variables were analysed with the McNemar chi-squared test. A p-value of less than 0.05 was accepted as statistically significant. All variables were expressed with 95% confidence intervals (CI).

Ethical Approval

Ethics Committee approval for the study was obtained.

Results

During the study period, a total of 328 women presented to the gynecology outpatient clinic for implantation of a CuIUD. All women were asked to participate in the study, and 280 women gave consent and completed the FSFI immediately before the procedure. Of 280 participating women, 73 failed to attend one or both of the scheduled follow-up visits at one and three months or presented beyond the proposed period. The final analysis included 207 women. The mean time between the first and last stages was 94.4±6.2 days (range 86-102). Each administration of FSFI took approximately 15 minutes. None of the 207 women required device removal.

Of 207 women, 48 and 159 were primiparous and multiparous, respectively. The mean age was 34.2±6.4 years (range 22-42). The sociodemographic and clinical characteristics of the participants are summarised in Table 1. None of the women had previously used an intrauterine device for contraception.

At baseline, the incidence of sexual dysfunction was 41.1%, which increased significantly to 47.3% compared with baseline and final assessments (43. 3%) (p=0.034).

Comparative data and FSFI scores obtained at three time periods are presented in Table 2. The incidence of abnormal uterine bleeding increased significantly at 1 and 3 months compared with baseline (p=0.038). Similarly, the incidence of vaginal discharge increased significantly at 1 month (p=0.001), but returned to a similar rate at 3 months.

Scores of sexual desire and sexual arousal were significantly lower a month later than those at baseline and 3 months later. Pain scores also increased significantly following implantation, both at 1 and 3 months (p<0.05). The scores of lubrication, orgasm, satisfaction, and total FSFI score remained similar following intrauterine device implantation.

Table 1. Sociodemographic and clinical characteristics of 207 women.

	Mean±SD	Count	Percentage
Current age (years)	34.2±6.4		
Parity			
Primiparity		48	21.2
Multiparity		159	76.8
Delivery methods			
Normal vaginal delivery		145	70.0
Cesarean section		62	30.0
Education status			
Primary school		68	29.0
Secondary or/and high school		103	53.6
University		36	17.4

Table 2. Comparisons of baseline data with those at 1 and 3 months.

Parameters	Baseline n=207	1 month n=207	3 months n=207	P
Abnormal bleeding, n (%)	30 (14.5)	55 (26.6)	46 (22.2)	P: 0.034[b]
Vaginal discharge, n (%)	43 (20.7)	81 (39.9)	58 (28.0)	P:0.001[b]
Total FSFI score, mean±SD	25.6±4.5	25.1±4.9	25.6±4.7	NS[c]
Desire, mean±SD	4.6±1.2	4.3±1.3	4.7±1.1	P1: 0.002[c]
				P2:NS[c]
				P3:0.001[c]
Arousal, mean±SD	4.6±1.2	4.3±1.3	4.6±1.1	P1: 0.01[c]
				P2:NS[c]
				P3:0.004[c]
Lubrication, mean±SD	4.0±1.1	3.9±1.1	3.9±1.2	NS[c]
Orgasm, mean±SD	4.3±1.1	4.3±1.0	4.3±1.2	NS[c]
Satisfaction, mean±SD	4.6±1.2	4.5±1.4	4.4±1.3	NS[c]
Pain, mean±SD	3.3±0.8	3.8±1.3	3.7±1.2	P1: 0.001[c]
				P2:0.007[c]
				P3:NS[c]
Sexual dysfunction a n (%)	85 (41.1)	98 (47.3)	89 (43.3)	P: 0.038[b]

aA FSFI score of <26.55 indicates sexual dysfunction. b Mcnamer Chi-squared test; cRepeated Measure ANOVA test (Bonferroni). NS: Not significant; N: Number; %: Percentage; SD: Standard deviation. P indicates across-group comparisons; P1: Baseline- 1 month; P2: Baseline - 3 months; P3: 1 month - 3 months.

Discussion

We evaluated the impact of CuIUD on sexual function as determined by the FSFI scores. Our findings show that a considerable proportion of women (41.1%) already had sexual dysfunction. Following the implantation of a CuIUD, sexual dysfunction increased significantly by 6.2% at 1 month. However, its incidence returned to baseline at 3 months. Apart from the increase in sexual dysfunction, the scores of sexual desire and sexual arousal, and the total FSFI score showed corresponding increases at 1 month following implantation, whereas pain scores were significantly higher both at 1 and 3 months compared with baseline.

As complications of CuIUD implantation, the incidence of abnormal uterine bleeding rose significantly by 12.1% and 7.7% as compared with baseline at 1 and 3 months, respectively. Similarly, the incidence of vaginal discharge increased significantly at 1 month, but returned to a similar rate at 3 months.

High rates of sexual dysfunction among women without a CuIUD have also been reported. A study comparing women with and without CuIUD reported sexual dysfunction in 37.7% of women without a CuIUD [10]. Even higher rates up to 55% have been found [11].

It is not surprising that implantation of a CuIUD would be associated with decreased sexual function, sexual desire, sexual arousal, and increased pain in the early period. This is because most women with a CuIUD still have fears of becoming pregnant and experience increased levels of pain due to an implanted CuIUD, both keeping them from being sexually activity. In the course of time, both fears and pain regress, allowing sexual function to return pre-implantation levels.

Studies on the impact of CuIUD implantation for contraception have mainly compared sexual function among women with and without a CuIUD [12, 13]. To our knowledge, pre- and post-implantation comparisons among the same sample have not been reported. The current comparative study represents the first to provide insight into the postprocedural effects of CuIUD, along with alterations in sexual function.

Limitations

Our study has pros over the existing literature reports with its prospective design and comparisons within the same cohort. Its main limitation is that it reflects a single-centre experience.

Conclusion

The use of intrauterine devices for contraception is highly common among women of reproductive ages; therefore, providing these women with necessary information about the use and adverse effects of intrauterine devices would mitigate their complaints about CuIUDs, particularly with respect to temporarily decreased sexual function.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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Conflict of interest

The authors declare no conflict of interest.

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